

## Water Quality Improvement in Cool & Cold Water Aquaculture © 2010

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*ECOPROBIOTICS®, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. ECOPROBIOTICS® increase biodiversity. Just as people take probiotic yogurt for its' ability to assure the presence of the optimal community for digestion and immunity, ECOPROBIOTICS® improve ecosystem health. EVERY PRODUCTION of Bacta-Pur® products is analyzed and cleared for shipment ONLY after passing all performance tests and being CERTIFIED PATHOGEN FREE using techniques from the food industry. ECOPROBIOTICS® are purely natural and beneficial; they NEVER contain added chemicals such as surfactants, emulsifiers or enzymes..., nor do they contain genetically modified (GMO) or deliberately mutated organisms. ECOPROBIOTICS® are safe and beneficial. Disease causing organisms are never used, as others do or permit. All bacterial cultures in the Bacta-Pur® product are listed on the Canadian DSL.*

<b>Summary</b>	
<b>SYMPTOMS</b>	<b>TREATMENT BENEFITS</b>
• high ammonia, nitrite and/or nitrate	• reduce ammonia, nitrite and nitrate
• low oxygen levels	• facilitate oxygenation
• excessive green water or filamentous algae	• reduce nutrients which cause algal blooms
• excessive sludge	• biodegrade sludge
• poor flavor of fish due to poor water quality	• improve flavor by improving water quality and biodegrading geosmine and other causes of off-flavor
• fish stressed, many diseases	• reduce stress and disease susceptibility
• poor conversion efficiency	• improve conversion efficiency, transform pollutants into natural and beneficial food
• excessive nitrogen and phosphorus	• reduce nitrogen and phosphorus

### Background

Poor water quality is a major stress to all aquatic animals. Stresses are additive and increase the susceptibility of the animals to disease while decreasing their growth rate and feed conversion efficiency. To say that antibiotics and bactericidal products are essential is to admit that adequate water quality is not being maintained. It is much easier to prevent diseases than to try to cure them. Disinfectants may help avoid some diseases, but they treat only symptoms and not the cause of the problems. The Bacta-Pur® System improves water quality, reduces stress to the animals, improves growth and feed conversion and reduces the need for and expenses of drugs. Drugs cannot be used indefinitely to compensate for declining water quality. If proper attention is not paid to the maintenance of good water quality, decreasing production and reduced profits are inevitable.

ECOPROBIOTICS® convert aquacultural wastes into beneficial microbes; the biomass becomes natural food for higher life forms such as fishes and invertebrates. ECOPROBIOTICS® improve water quality and fill niches reducing those for pathogens.

Biological filtration and water quality improvement can be accelerated with a BACTIVATOR®<sup>®</sup>.



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## Treatment with the Bacta-Pur® System

**Ponds** are treated with a combination of two products (Bacta-Pur® N3000 and Bacta-Pur® XLG (for fresh water —  $\leq 5$  ppt) or Bacta-Pur® XLSW (for salt water—  $>5$  ppt)). The two communities work together to produce clearer water, control ammonia and nitrite, reduce soluble phosphorus, digest organic sediments and convert pollutants into food for invertebrates and fishes.

One L Bacta-Pur® XLG or Bacta-Pur® XLSW & 1 L Bacta-Pur® N3000 / 1,000,000 L water <sup>(1)</sup> / week. The application technique consists of preactivating Bacta-Pur® XLG or Bacta-Pur® XLSW for 24 hours; Bacta-Pur® ACTIVATORS 1&2 or GS. The weekly dose of Bacta-Pur® is then diluted with 10-100 X with the system water and is sprayed or splashed over the surface of the pond or system.

**Settling Ponds** are treated with Bacta-Pur® XLG or Bacta-Pur® XLSW to digest sludge and remove soluble pollutants.

Four L Bacta-Pur® XLG / 1,000,000 L settling pond water<sup>(1)</sup> / week. The weekly dose of Bacta-Pur® XLG or Bacta-Pur® XLSW is preactivated. The mixture is then diluted with 10-100 X the volume of pond water and is sprayed or splashed over the surface of the pond.

**Raceways & Hatcheries** are automatically treated with a BACTIVATOR® AQN, which provides filtration and UV disinfection of incoming water. The BACTIVATOR® AQN activates, grows and introduces a community of nitrifying and denitrifying bacteria into the water. The daily maintenance dose for a recirculation system is 1.5 – 3 ppm based on system volume. The higher dose should be used for starting a system or for cold water (under 10°C), or for high biomass.

One Liter  $\pm$  1 US quart, 4 Liters  $\pm$  1 US gallon

### NOTES:

<sup>1</sup>Calculate pond volume by multiplying the averages of the length, the width, and the depth.

$1\text{m}^3 = 1000\text{ L}$ ,  $1\text{ft}^3 = 28.3\text{ L}$ . Other useful conversion factors:  $1\text{ kg} = 2.2\text{ lb.}$ ;  $1\text{ L} = 0.264\text{ gal US}$ .

Recommended method of use in small ponds, is to pump the diluted mixture into the sediments or to simply pour the mixture down a pipe the end of which is resting on the bottom. If the pipe is used, the pipe should be flushed with pond water before withdrawing it from the pond. This will assure that the Bacta-Pur® is released into the sediments.

